

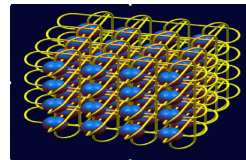
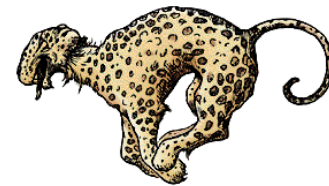
System Software Environments

Breakout Report

June 27, 2002

What is the scope of existing efforts?

- Scalable Systems Software Center
- FAST-OS “lightweight kernel” effort
- Science Appliance effort
- Systems Management research
- Blue Gene



Anemic Areas of Existing Research

What are the under funded critical research issues?

- Security – protecting systems from compromise
- Fault tolerance – being able to run through failure.
Three steps: detection, notification, system recovery
Linkage between projects and groups for FT chain.
- Validation of result – how know that app got right ans.
Given system runs through failure.

Potential Gaps in Research

What are the gaps in MICS research portfolio related to peta-scale computing?

- What happens after Linux?
- OS that supports the programming model – if it is going to change from dist. mem. Message passing then...
- Alternate to microkernel approach “*Concrete*” holds everything together but is really heavy.
- Local address space vs more expansive address support
- Experimental architecture research testbed
 - Arose during PIM discussion
 - Platforms for software development
 - Not just the commodity clusters we work with today ES40 and PIM not addressed

Getting Help From Others

What is needed most from the other four groups?

- **Runtime & Programming models** – feedback to OS so it can reconfigure to optimize needs, PIM is entangled across Programming and OS.
- **Data & vizualization** - Scalable I/O – leverage SDM ISIC *and Program models*
 - Checkpoint/restart 100K nodes
- **Portability & Interoperability** - ??? Discussion but no clear things we need to leverage
- **Performance** – feedback to OS so it can correct bottlenecks while apps run.